ORIGINAL ARTICLE

How effective are mental health nurses in A&E departments?

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Background: A&E departments are key points of contact for many people with mental health problems. Various models of care have been developed in A&E departments for delivering mental health services, but few have been assessed for effectiveness. The present study aimed to assess the impact of a dedicated A&E psychiatric nurse service on several outcomes relevant to patients and clinicians.

Methods: A crossover design was used to introduce a dedicated psychiatric nurse service (comprising four experienced community psychiatric nurses) into two busy UK A&E departments. Standardised assessments were completed for each patient, and a random sample of these independently assessed for quality. Data were also collected on the number of patients assessed, psychiatric nurse time employed, waiting times, onward referrals, repeat attendances, patient satisfaction, and staff views.

Results: A&E staff referred about a third of patients judged to have mental health problems to the psychiatric nurse service; approximately half of those assessed had a psychiatric history. On average, assessments took 60 min and over 90% of the formulated management plans were judged appropriate by independent assessors. The psychiatric nurse intervention had little impact on waiting times or satisfaction levels for mental health patients, although there was evidence of a change in onward referral patterns.

Comment: Psychiatric nurse assessment services have been introduced in many A&E departments, although the evidence base for the effectiveness of this development is not well established. This study presents evidence that psychiatric nurses can provide an accurate assessment and referral service with advantages for patient care.

A&E departments have long been utilised as a first point of contact for patients with mental health problems seeking care. In the early 1990s the visibility of A&E departments as a route of entry to mental health services increased following changes to the provision of services for patients with mental health problems: the move of patients from institutions into the community; the reduction in the number of available psychiatric beds; and changes in demographic and socioeconomic factors. These changes, at a time when the community infrastructure necessary to support them was still being developed, led to increases in the number of patients with severe and enduring mental illness living in inner city areas with limited access to supportive services.[1] It is likely that this led to a growth in the number of patients with mental health problems presenting to A&E departments.

Patients who present to A&E in need of psychiatric services have a unique set of needs, which are quite different from those of patients with physical illness, and can present particular diagnostic and management challenges for A&E staff. The demands made by these patients on staff time and facilities together with the general growth in A&E attendances[2–4] highlighted the need for specialist mental health knowledge and skills to be available within A&E departments. Several institutions in the UK addressed this need by following the US approach and introducing psychiatric liaison nurses to their A&E departments.[5–7] A number of influential UK bodies encouraged such developments.[8 9]

By the mid to late 1990s there was a growing acceptance of the value of psychiatric nurses working in A&E departments throughout the UK despite little research to assess their effectiveness. Much of the literature in support of these developments originated from reports describing the role of the psychiatric nurse in A&E and retrospective evaluations of established services where positive outcomes were most likely desired.[10–16] At the time when this study was developed, few studies had systematically evaluated the clinical effectiveness of psychiatric nurses in A&E,[17 18] a situation that appears to extend to the present day. A recent literature review found several descriptive accounts of mental health liaison services operating ''successfully'' in emergency departments,[19–22] but only two studies were identified that contained some evaluation of the service model adopted.[23 24] Both of these studies, however, presented insufficient objective data regarding the value and benefits of the service to patients. More recently, NICE produced guidance on the short term management of self harm and recommended that all patients should be offered psychosocial assessment at triage in emergency departments.[25] This paper also recommended that mental health professionals should be integrated into emergency departments to improve psychosocial assessment and provide training for non-mental health professionals working in the emergency department.

The present study was designed to test the hypothesis that measurable improvements in patient, staff, and organisational outcomes occur when a psychiatric nurse is available in A&E departments to assess and manage patients presenting with mental health problems. Specifically, the study evaluated the accuracy of the assessments and diagnoses made by psychiatric nurses working in A&E; determined the impact of the availability of a psychiatric nurse on waiting times, onward referrals, repeat attendances, and patient satisfaction for those with mental health problems; and explored the views of staff regarding employment of psychiatric nurses in the A&E department.

METHODS

Study design

The study took place in 1999 and involved two, busy, inner city Glasgow A&E departments that saw approximately

55 000 and 70 000 patients each year. Ethical approval for all components of the study, that is, psychiatric nurse intervention, retrospective case note review, and patient and staff surveys, was obtained from the relevant NHS Local Research Ethics Committees. In-depth discussion with A&E staff at both sites also took place prior to the start of the study to ensure that each department was fully committed to the project. An A&E staff nurse at each site assumed responsibility for continually updating their colleagues about the study and ensuring that data collection processes were in place.

A survey of each department was carried out pre-intervention to establish baseline data relating to attendees with mental health problems and enable comparisons to be made between sites. A crossover design was then utilised to sequentially introduce a 3 month psychiatric nurse intervention into each A&E department. This crossover design allowed data to be collated during pre- and post-intervention periods at both sites over similar time periods. This facilitated making comparisons between hospitals which would not be affected by seasonal variation in the incidence of mental health problems. The sequence, duration, and number of attendees with mental health problems during the pre-intervention, intervention, and post-intervention periods are shown in table 1. No psychiatric nursing service existed at either hospital prior to the study.

Specialist psychiatric nursing intervention

The same four G-grade psychiatric nurses (RMN qualified, two also RGN qualified) were recruited to provide the study intervention at both hospital sites, that is, during months 4–6 at hospital 1 and months 7–9 at hospital 2. Each nurse was an experienced community psychiatric nurse with a proven ability to work in an autonomous manner and with good working knowledge of local community mental health resources. The nurses worked together in each of the A&E departments with a remit to: (a) see as many patients as possible who A&E staff thought could benefit from a mental health assessment (identification and inclusion criteria are available from the authors); (b) assess these individuals to determine the nature and possible cause of mental illness related symptoms; (c) assess risk as appropriate; (d) provide a brief treatment intervention, where possible; and (e) refer patients to appropriate services. Depending on waiting times to see an emergency department doctor and the nature of any co-existing physical problems, the psychiatric nurse intervened either before or after a member of the medical staff had seen the patient. The diversity of the patient population meant that the content of the intervention was tailored to the individual and related to the nature of the patient's problem and the potential risk to themselves or others. Prior to any assessment or intervention, potential participants were given an information sheet and a verbal explanation of the study. Written consent was then obtained if the patient agreed to participate.

Table 1 Study design

Month	Hospital 1 (3957)	Hospital 2 (2140)
1–3	Pre-intervention survey (949)	Pre-intervention survey (509)
4–6	Psychiatric nursing intervention (1075), of which 785 while psychiatric nurse on duty	Pre-intervention survey (522)
7–9	Post-intervention survey (963)	Psychiatric nursing intervention (552), of which 493 while psychiatric nurse on duty
10–12	Post-intervention survey (970)	Post-intervention survey (557)

Number in brackets indicates number of attendees with mental health problems presenting to A&E in specified period.

Assessment of needs and risk for people with mental health problems is part of a therapeutic process to understand and engage service users. Assessments were carried out in available cubicles/rooms within each department. After obtaining a full history of the patient's presenting problem and conducting a mental state assessment (using a standardised form), interventions offered included basic anxiety management, crisis intervention using problem and goal orientated approaches, emotional support and direction to patients and families, mental health guidance, and advice on medication and other relevant services.

Psychiatric nursing cover was provided by the study team to each department for approximately 130 h per week. The time period most often without cover was between 8 am and midday. Working as part of the A&E team, the psychiatric nurses also helped carry out basic nursing duties within the department, followed similar shift patterns, and wore the same protective clothing as other A&E staff. Clinical supervision was provided by the A&E nurse managers and, where necessary, a consultant psychiatrist.

Data collection

Various data collection methods were employed to fulfil the study objectives. Psychiatric nursing assessments were completed for each patient seen by the psychiatric nurse. These were very similar to those outlined in the 2004 NICE guideline[25] and included the patient's history, mental state, diagnosis, and management plan. A random sample of 40 of these assessments (stratified by hospital and psychiatric nurse) was reviewed independently by two clinicians: a trained psychiatrist and a senior mental health nurse who were independent of the research team, and who each had extensive experience of psychiatric assessment of patients presenting as emergencies. Each clinical assessment was reviewed using a number of rating scales, specifically designed for the project, covering comprehensiveness of the assessment and appropriateness of problem formulation, diagnosis, and management plan. Prior to undertaking this exercise both reviewers assessed a sample of plans to ensure inter-rater reliability was acceptable. Each reviewer rated the assessments and care plans individually and then compared results; the few disagreements arising were resolved by discussion.

Data for key events (for example, patient arrival at A&E), onward referrals, and repeat attendances were collated for each of the study periods of interest (that is, pre-intervention, intervention, and post-intervention) via retrospective review of A&E case notes and computer records. A patient satisfaction survey involving a sample of 511 patients who presented to A&E with mental health problems and 527 general A&E patients was carried out during the different phases of the study. The survey asked questions relating to waiting times, facilities, provision of information, and care and treatment received in A&E. A&E staff members' views of the psychiatric nursing intervention were determined via self completion questionnaires sent to all nursing and medical staff at both hospitals and by conducting face to face interviews with a representative sample of 34 members of staff. Verbal consent was obtained prior to conducting any interviews. The patient and staff surveys were specifically designed for the study as no suitable tools measuring patient and staff perceptions in A&E could be identified at the time of the study.

Data analysis

Analysis was carried out using SPSS. A 5% level of significance was used throughout.

For those patients referred to the psychiatric nursing team, the accuracy of assessment and diagnosis was summarised using descriptive statistics. Differences in waiting times and onward referral patterns for all patients with mental health problems between intervention and non-intervention periods were tested initially using ANOVA and χ^2 procedures as appropriate. Linear and multinomial regression techniques using a stepwise approach were then applied to examine the effect of intervention period, seeing a psychiatric nurse, and other possible explanatory variables on waiting time and onward referral, respectively. Explanatory variables were hypothesised a priori to influence the dependent variable or confound the effect of the intervention period (hospital, month/day/time of attendance, nature of mental health problem, triage category, arrival mode, intoxication indicator, patient age/sex/deprivation category, A&E patient throughput, GP registration). The square root of waiting times was used in the ANOVA and regression procedures. Repeat attendance levels per study period were compared using a Kruskal-Wallis test.

Descriptive statistics were used to summarise patient and staff survey results and comparisons between different patient groups were made using χ^2 tests. Content analysis was carried out on qualitative data accrued via staff interviews and patient and staff surveys.

RESULTS

Number of patients assessed and psychiatric nurse time utilised

About one third (411) of patients with mental health problems presenting to A&E while a psychiatric nurse was on duty during the intervention were referred to the psychiatric nurse team, and just over 90% of these patients were assessed. The average time spent with each patient was 60 min. The patient was referred to the psychiatric nurse by an A&E nurse in almost 60% of cases and by an A&E doctor in 23% of cases. Approximately half of the patients seen by a psychiatric nurse had a psychiatric history. During an average night shift (8 pm–8 am) the psychiatric nurse team member on duty spent about a third of their time on mental health related activities, compared with a quarter of their time during an average early (8 am–8 pm) or back shift (midday–midnight).

Accuracy of assessment and diagnosis

Ninety two per cent (37) of the reviewed patient management plans formulated by the psychiatric nurses during intervention were judged to be appropriate and of good quality. Two plans were lacking detail in key areas and therefore judged insufficient and no management plan was documented in one case. An ICD-10 diagnosis was provided in 25 (62.5%) of the reviewed cases, 23 (92%) of which were judged as appropriate. For the 15 assessments where no ICD-10 diagnosis was given, it was judged that this could have been readily assigned from the summary statement.

Waiting times

The waiting times from arrival until assessment and treatment could be calculated for 72% of the attendances at A&E where a mental health problem was identified and are summarised in table 2. Despite average waiting times at each hospital being shortest during the intervention period, there were no significant differences between pre-intervention and intervention periods at either site (hospital 1, $p = 0.763$; hospital 2, $p = 0.076$). When compared with the post-intervention period, only at hospital 1 was there a significantly shorter waiting time (of around 11 min) during intervention ($p<0.001$). Regression analysis resulted in a model containing eight significant variables (table 3) explaining 17% of the variation in waiting times. Of particular interest, A&E attendance in the intervention period and seeing a psychiatric nurse were significantly associated with shorter waiting times for patients with mental health problems ($p = 0.01$, $p<0.001$, respectively).

Onward referral and repeat attendances

There was a significant difference in onward referral patterns between intervention and non-intervention periods of the study at both sites (hospital 1, $\chi^2 = 28.8$, $p<0.001$; hospital 2, $\chi^2 = 25.3$, $p<0.01$). These differences were small with the exception of a decrease in admissions to a general hospital ward and an increase in GP discharges at hospital 2 during the intervention period (table 4). Regression analysis resulted in a model containing 17 variables (table 5) that explained 36% of the variation in referrals and indicated a significant effect of the intervention on onward referral patterns: patients with mental health problems seen by a psychiatric nurse were more likely to be transferred to a mental health unit than (a) discharged against medical advice ($p = 0.001$), (b) referred to an outpatient clinic ($p = 0.027$), or (c) admitted to a general medical ward ($p<0.001$).

No significant differences in the number of repeat attendances to A&E by patients with mental health problems were detected between intervention and non-intervention periods of the study at either site.

Patient satisfaction

Thirty one per cent ($n = 156$) of patients with mental health problems and 52% ($n = 272$) of general A&E patients completed a questionnaire. Levels of satisfaction recorded were high for all patients with no significant differences between intervention and non-intervention periods for attendees with mental health problems or general A&E attendees. The single most important concern for patients with mental health problems related to lack of empathy from A&E staff, whereas physical environment and waiting times were considered of greatest importance to general A&E patients.

Staff views

At both hospitals A&E staff reported that the psychiatric nurses integrated well with the A&E team. Willingness to participate in general A&E duties together with ''approachable and friendly'' personalities were cited as the main reasons for this success. The psychiatric nurses in this study, however, reported feelings of isolation from mental health colleagues and ''losing touch'' with developments in community mental health services.

The psychiatric nurse team was perceived to have had a positive impact on each department. A&E staff primarily related this to the practical advantages of having psychiatric nurses available in the department rather than to any particular understanding of the skills they could offer. A&E staff did report, however, that ''patients were more effectively managed'' when a psychiatric nurse was present due to their knowledge of the systems and services in place for mental health patients which facilitated speedier and more appropriate follow up. A&E staff also reported that the psychiatric nurses were available in the department when they were most needed, although the return of patients specifically to see the psychiatric nurse team was reported as problematic. There appeared to be a difference in medical and nursing perceptions of the usefulness of the psychiatric nurses; medical staff in particular reported ''missing'' the psychiatric nurses after the intervention period finished.

Table 2 Waiting time (minutes) from arrival to treatment for mental health attendees at A&E

Site	Study period	Number of attendees*	Mean waiting time (min)	SD (min)	95% CI for mean (min)
Hospital 1	Pre-intervention (months 1–3)	700	65.9	53.4	62.0 to 70.0
	Intervention (months 4–6)	807	62.9	52.3	59.3 to 66.5
	Post-intervention (months 7–12)	1514	74.1	54.7	71.3 to 76.8
	Total hospital 1	3021	69.2	54.0	67.3 to 71.1
Hospital 2	Pre-intervention (months 1–6)	672	50.5	48.3	46.9 to 54.2
	Intervention (months 7–9)	331	46.0	48.9	40.7 to 51.2
	Post-intervention (months 10–12)	340	48.8	46.3	43.8 to 53.7
	Total hospital 2	1343	49.0	48.0	46.4 to 51.5
Both hospitals	Pre-intervention	1372	58.4	51.5	55.7 to 61.1
	Intervention	1138	58.0	51.9	55.0 to 61.0
	Post-intervention	1854	69.4	54.1	67.0 to 71.9
	Total hospital 1 and 2	4364	63.0	53.0	61.4 to 64.6

*Waiting times data available for 72% (4364/6097) of attendees.

DISCUSSION

This is one of the few studies in the UK to objectively evaluate the impact of psychiatric nurses in A&E and important findings have emerged.

Accuracy of assessment and diagnosis

The high quality of assessments and management plans formulated by the psychiatric nurses in this study suggest that experienced psychiatric nurses have the skills and knowledge to provide appropriate clinical assessment and make management decisions in the A&E setting. No other published studies have evaluated the assessment skills of psychiatric nurses in A&E settings. Catalan, however supported the idea that nurses can be as effective as psychiatrists in the assessment and management of deliberate self poisoning patients.[26] Hussein also presented encouraging evidence of nurses undertaking clinical assessments in acute psychiatric settings and reaching similar decisions to their medical colleagues on diagnosis and treatment programmes.[27]

Waiting times

Results showed that the introduction of psychiatric nurses to emergency departments in this study had no clinically relevant impact on waiting times for patients with mental health problems. This finding is contrary to results obtained from service evaluations.[28 29] This may be explained by the lack of dedicated assessment rooms for the intervention. Thus the impact on waiting times was limited by constraints beyond the psychiatric nurses' control. If useful and timely mental health assessment and treatment are to be carried out within the normal casualty area, it is essential that suitable interview rooms are available. In recent guidance from NICE,[25] it is also emphasised that waiting environments need to be safe, to be supportive, and to minimise distress; similar considerations also apply to facilities for psychiatric assessment in emergency departments.

Referral patterns

There was no statistical evidence of a difference in the number of onward referrals to statutory community mental health resources between intervention and non-intervention periods of the study. At the time, this may have been due to the reluctance of these services to accept direct referrals from A&E, particularly of individuals that were not known to their service. In addition, the lack of responsive services for patients with alcohol and drug problems was of particular concern. In light of these constraints, it is difficult to envisage how psychiatric nurses in A&E could have influenced referral patterns to community mental health resources. Emergency departments and local mental health services need to jointly plan the delivery of appropriate services for people with mental health problems.

Staff views

Medical staff in A&E appeared to appreciate the psychiatric nurse service better than their A&E nursing colleagues. Perhaps this derives from a relative lack of understanding of the skills employed by psychiatric nurses. While the mental health nurses became involved, where time allowed, in helping provide physical nursing care, there was little evidence of emergency department staff developing better skills in managing people with mental health problems. This is perhaps to be expected given the relatively short duration

Table 3 Waiting times: regression analysis parameter estimates (n = 4056†)

Variable	Factor levels	β coefficient	Significance	SE
Study period	Pre-intervention *v* intervention	0.069		0.133
	Pre-intervention *v* post-intervention	−0.337	*	0.112
DSH‡ diagnosis	DSH *v* no DSH	−0.564	**	0.104
Arrival mode	Emergency ambulance *v* own arrangements	−0.441	**	0.099
	Emergency ambulance *v* police/prison escort	0.265		0.322
	Emergency ambulance *v* other mode of arrival	−0.443		0.257
Arrival time band	2 am–8 am *v* 8 am–2 pm	−0.069		0.165
	2 am–8 am *v* 2 pm–8 pm	−0.770	**	0.153
	2 am–8 am *v* 8 pm–2 am	−0.752	**	0.150
Triage category	Normal/routine *v* immediate	3.758	**	0.237
	Normal/routine *v* urgent	0.486	**	0.104
See psychiatric nurse	See psychiatric nurse *v* not see psychiatric nurse	−1.522	**	0.211
No. of A&E attendances	NA	0.023	**	0.002
Site	Hospital 2 *v* hospital 1	−0.586	**	0.156

*$p<0.01$, **$p<0.001$.
†1733 attendees with available waiting times excluded due to missing explanatory variable values.
‡Deliberate self harm.

Table 4 Referral rates per 100 A&E mental health attendees (n = 6097)

	Hospital 1 (n = 3957)			Hospital 2 (n = 2140)		
Onward referral	**Pre-int**	**Int**	**Post-int**	**Pre-int**	**Int**	**Post-int**
Admitted to general hospital ward, %	39.9	38.8	43.8	48.2	41.7	44.9
Discharged to GP care, %	36.0	36.4	35.5	28.5	37.1	35.4
Self discharged, %	11.8	12.1	13.4	10.1	7.8	9.2
Transferred to psychiatric hospital, %	5.7	5.6	3.7	8.9	7.6	7.2
Referred to OP clinic, %	4.0	4.0	2.7	3.0	2.0	2.3
Other, %	0.8	1.8	0.6	1.1	2.2	0.5
Not recorded, %	1.8	1.3	0.3	0.2	1.6	0.5

Int, intervention; OP, outpatient; Pre-int, pre-intervention; Post-int, post-intervention.

of the intervention period. Given more established services of this kind, it is not unreasonable to expect that emergency department staff would develop better skills for the assessment and management of mental health patients. There are also issues for mental health staff providing services in A&E settings which should be addressed. Psychiatric nurses in this study reported feelings of isolation from mental health colleagues and ''losing touch'' with developments in community mental health services. Clearly such staff are most effective when integrated with their colleagues in mental health services. More integrated models of service delivery may also help in the management of those patients who return unscheduled to see the mental health nurse at the A&E department. Models of service delivery utilising mental health liaison teams to A&E departments may be more cost effective and offer more sustainable models of care.[30 31]

Limitations

The limitations of the study are recognised. Failure to utilise an RCT design to evaluate the psychiatric nurse intervention is recognised as a weakness in the study design. An RCT design was considered impractical after consideration of the difficulties associated with randomising this patient group: mental health problems are not always detected at the same stage in the patient's A&E visit; medical attention is often primarily sought; small numbers are involved; and there are ethical considerations. A cluster randomised design would have been feasible; however, it would have been difficult to find a large enough number of suitable sites given the variety of models of care in existence and the rapidity of change of services at that time. For these reasons, a quasi-experimental crossover design was adopted. This design was weakened by the short term nature (3 months) of the intervention period of the study at each site which may not have been long enough for any changes to become apparent in the specified outcomes. A longer intervention period may have realised more effects but was not feasible given the available resources. This study was not designed to measure the impact of the psychiatric nursing intervention on clinical outcomes as this would have required some form of longitudinal assessment. Future research could usefully be undertaken to assess the impact of psychiatric intervention on clinical outcomes and perhaps some of the difficulties in this study could be overcome by using a cluster randomised trial design. Finally, although this study was completed in 2001, the authors believe that the results presented in this paper remain highly relevant to current practice given the recent NICE Clinical Guideline.[25]

Table 5 Referral patterns: regression analysis parameter estimates (n = 4723*)

Effect	χ^2	df	Significance
Study period	21.0	10	0.021
Sex	20.1	5	0.001
DSH† diagnosis	78.9	5	<0.001
Alcohol problems diagnosis	23.1	5	<0.001
Drug abuse diagnosis	23.5	5	<0.001
Depression diagnosis	89.8	5	<0.001
Anxiety diagnosis	184.0	5	<0.001
Major psychiatric illness diagnosis	102.0	5	<0.001
Dementia diagnosis	21.1	5	0.001
Other psychiatric diagnosis	124.4	5	<0.001
Intoxication	149.2	5	<0.001
Arrival mode	77.8	15	<0.001
Arrival time band	274.1	10	<0.001
Triage category	46.4	5	<0.001
See psychiatric nurse	39.7	15	<0.001
Age	48.5	5	<0.001
Site	16.0	5	0.007

*1374 attendees with available referral data excluded due to missing explanatory variable values.
†Deliberate self harm.
Dependent variable is categorical variable ''onward referral'' with six levels: admitted to general hospital ward, discharged to GP care, discharged against medical advice/self discharged, transferred to a mental health unit, referred to outpatient clinic, other.

CONCLUSION

This study highlights that experienced psychiatric nurses working in A&E can provide appropriate clinical assessment skills and management for patients with mental health problems, but such service models may have little or no impact on waiting times to treatment or patient satisfaction.

Although we have shown that psychiatric nurses in A&E can provide effective assessment and care for patients presenting with mental health problems and can complement the work of the A&E department, especially after hours when few mental health services continue to operate, more research is needed about the model of service adopted. There is a need for studies that compare different models and incorporate objective evaluation of patient and staff outcomes. Such models need to ensure that emergency departments and local mental health services jointly plan the delivery of appropriate services and ensure that psychiatric nursing staff working within such environments do not become professionally isolated from their mental health colleagues.

Since this study was completed, Glasgow has established a dedicated, nurse led ''out of hours'' psychiatric service for A&E departments and emergency GP clinics. This allows A&E staff at a number of hospitals in the city to request a mental health assessment by community psychiatric nurses based in a central service.

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